

African-American children vaccinated under 2 years of age compared to those vaccinated after 3 years. The statistically significant difference was deliberately omitted from the paper. Brian Hooker re-analyzed the raw data from this study and confirmed a 3.4 [fold increase in risk in children vaccinated prior to the age of 2 years [4]. The article suggests that there may be genetic and racial susceptibility to adverse events and administration of the vaccine at an early age could precipitate it.

The IAPCOI quotes seven studies to support their claim that vaccination at 9 months is safe. These are small trials looking mostly at antibody titers following vaccination. It is difficult to base safety claims or make general recommendations to a population as a whole, on these short term studies.

Many pediatricians follow the CoI recommendations rather than the Government's National schedule. From the precautionary practice perspective, given the Thompson revelations, the CoI may need to reconsider their recommendation.

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## MMR Vaccine at 9 months: Author's Reply

I thank both group of authors for sharing their views on recent change in the recommendations on MMR vaccination. The reasons and the evidence behind changing the schedule are discussed in the IAP Position Paper on Measles and Rubella Elimination Strategies [1] and subsequent recommendations on IAP Immunization Schedule [2]. As mentioned in these papers, the main reason was Government of India (GoI) decision to include rubella immunization as bivalent MR vaccine at 9 months of age in place of standalone measles vaccine in its Universal Immunization Program (UIP). The Academy has been arguing for inclusion of MMR instead of MR in the UIP also. The committee considers the decision of using MR as 'unethical' and a sort of 'missed opportunity' when three instead of two vaccine preventable diseases (VPDs) can be targeted simultaneously with almost similar logistics and efforts. The main reason why government has not included mumps in their immunization schedule is lack of documentation of existing burden of the mumps in the community. So, the recommendation of giving MMR in place of measles vaccine should be viewed in this background. The new

recommendations will not only emphasize the need of targeting mumps also at least for control, but will ultimately pave the way for its inclusion in to the UIP at a later date. The stand-alone measles vaccine would become redundant and shall not be available for routine use in near future. Further, the new recommendations would also improve uptake and coverage of MMR vaccine even in the private sector. Though there is no authentic data available on the coverage rates of MMR at 4-6 years of age in the private health sector, the general impression is that it is not satisfactory.

There is adequate evidence, from the country and from outside, on the effectiveness of MMR when employed before 12 months of age [2]. An analysis of these studies would indicate that there is no change in the seroconversion of rubella when utilized below 12 months of age, and only some reduction in the seroconversion of measles and mumps in a couple of studies [2]. According to the meta-analysis and a systematic review done on effectiveness of measles vaccine, two doses of the vaccines are found to be more than 98% effective for adequate protection against measles [3,4]. The success of global initiative of measles elimination is hinged entirely on the provision of administering two doses of measles-containing vaccine to the target population. On the other hand, a single dose of rubella is considered adequate not only for seroconversion but also for long term protection

of the disease [5]. However, based on the indications for a second dose of measles-containing and mumps-containing vaccines, a second dose of MR or of MMR is now offered in most countries. The seroconversion and protective efficacy of mumps vaccine varies with the employed strain in the vaccine. However, accumulated global experience shows that two doses of the vaccine are required for long-term protection against mumps [6]. It is true that there are outbreaks amongst adolescents immunized even with two doses of MMR vaccine in few countries that may necessitate further doses. Few countries are already using MMR before 12 months of age, and now, the new very strong recommendations by WHO would further encourage many more developing countries to introduce either MMR or MR in their national immunization programs at 9 months of age [7].

IAPACVIP does not at all subscribe to the hypothesis that MMR vaccination is causally linked to the development of autism amongst vaccinees. There is no report from India that hints any such association. Even globally, there is strong evidence that MMR vaccine is not associated with autism [8-11]. On the other hand, the committee finds that evidence convincingly supports rejection of a causal relationship between MMR vaccine and autism [10]. Signs of autism typically appear around the same time that children are recommended to receive the MMR vaccine. Globally, the vaccine safety experts, including experts at WHO, Centre for Disease Control (CDC) and the American Academy of Pediatrics (AAP), agree that MMR vaccine is not responsible for increases in the number of children with autism [8,9,11].

This is to be noted that now India has also committed to Global Measles and Control of Rubella and CRS Initiative. Massive and frequent supplementary immunization activities (SIAs) shall take place amongst targeted age groups of 9 months to 15 years in coming years to ensure almost 100% coverage against measles and rubella. Herd immunity shall also provide added benefits to non-vaccinees. Once a Global or National Program is launched for control or elimination of a particular VPD, it becomes imperative for all other health establishments including academic bodies to support the ongoing initiative. That may even necessitate sometimes to make adjustments in the guidelines and recommendations issued even for office practice as happened with the Global polio eradication initiative. Though the focus, considerations, and objectives of a public health program and a private health care are different, ultimately we must not forget that what is not in the best interest of the individual cannot be in the best interest of the community, and what is in the best interest of the community is also in the best interest of the individual.

It would have been ideal to have a 3rd dose of the Mumps vaccine at some later age in the new schedule, but non-availability of a monovalent Mumps or even a bivalent Measles-Mumps vaccine made the task difficult. And recommending three doses of MMR would have been not only unwise and untenable, but also unprecedented. However, there is still scope of reviewing the recommendations at a later date.

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